

## 1. SCOPE

This specification governs the performance of the following pkcell Ni-CD battery Cylindrical Cell and its stack-up batteries.

pkcell Model: Ni-CD F7000mAh 3.6V

The data involving nominal voltage and the approximate weight of stake-up batteries shall be equal to the value of the unit cell multiplied by the number of unit cells in the battery.

Nominal voltage of unit cell = 1.2V

## 2. RATINGS

Description	Unit	Specification	Conditions
Nominal Voltage	V	3.6	
Nominal Capacity	mAh	7000	Standard Charge/discharge
Minimum Capacity	mAh	6650	Standard Charge/discharge
Standard Charge	mA	700(0.1C)	Ta=0~45°C
	hour	14-16	
Fast Charge	mA	1400(0.2C)	-ΔV=15~30mV/pcs Timercutoff=110%input capacity <sup>3</sup> Temp.cutoff=55°C Ta=10~45°C
	hour	6.5approx	
Trickle Charge	mA	210(0.03C) ~ 350(0.05C)	Ta=0~45 °C
Discharge Cut-off Voltage	V	3.0	Ta=-20~55°C
Maximum Discharge Current	mA	6000	Ta=10~45°C
Storage Temperature	°C	-20~35°C	Discharge state

## 3. PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature: Ta=20±5°C

Relative Humidity: 65±20%

Standard Charge/ Discharge Condition:

Charge: 700mA(0.1C)×16hrs

Discharge: 1400mA(0.2C)to1.0V/ cell

Table 1

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	$\geq 6650$	Standard Charge/Discharge	Up to 3 cycles are allowed
Open Circuit Voltage (OCV)	V	$\geq 3.75$	Within 1hr after standard charge	
Internal Impedance (Ri)	m $\Omega$	$\leq 80$	Upon fully charge(1kHz) (1kHz)	
High Rate Discharge (0.5C)	min	$\geq 108$	Standard Charge, 1hr rest before discharge	
Overcharge	N/A	No leakage nor explosion	700mA(0.1C) charge 48 hours	
Charge Retention	mAh	$\geq 600(60\%)$	Standard Charge, Storage: 7 days at 45°C, 0.2C Standard Discharge	
IEC Cycles Test	Cycle	$\geq 300$	IEC61951-1 (2003)	

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Table 2

Test	Unit	Specification	Conditions
Leakage	N/A	No leakage nor deformation.	Full charged at (0.1C) stand for 14 days
Short Circuit	N/A	Leakage & deformation may occur, but no explosion is allowed.	After standard charge, short circuit for 1 hour (leading wire=0.75mm <sup>2</sup> ×20mm)
Vibration Resistance	N/A	Change of voltage $\Delta V < 0.02V$ , Change of internal Impedance $\Delta Ri < 5 m\Omega$ .	Charge the battery 0.1C 16hrs, then leave for 24hrs. check battery before / after vibration. Amplitude: 1.5mm Vibration: 3000CPM Any direction for 60mins.

#### 4. CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

## 5. EXTERNAL APPEARANCE

The cell/ battery shall be free from cracks, scars, breakage, rust, Discoloration, leakage nor deformation.

## 6. CAUTION

- ◆.Reverse charging is not acceptable
- ◆.Do not burthen current when charging.
- ◆.Do not charge/discharge with more than the specified current.
- ◆.Do not short circuit the cell/ battery. Permanent damage to the cell/ battery may result.
- ◆. Do not incinerate or mutilate the cell/ battery.
- ◆.Do not subject batteries to adverse conditions like: extreme temperature, deep cycling and excessive Overcharge/overdischarge.The life expectancy may be reduced.
- ◆.Store the cell/ battery in a cool dry place. Always discharge the cell/battery before bulk storage or shipment.
- ◆. Cycle(charge and discharge) the battery every 3-6months to maintain cell/battery performance when being stored for an extended period of time.
- ◆.Keep away from children. If swallowed, contact a physician at once.
- ◆. Avoid airtight battery compartments. Ventilation should be provided in the plastic case of batteries, otherwise oxygen and hydrogen gas generated inside<sup>-5-</sup> can cause explosion when exposed to fire sources such as motors or switches.

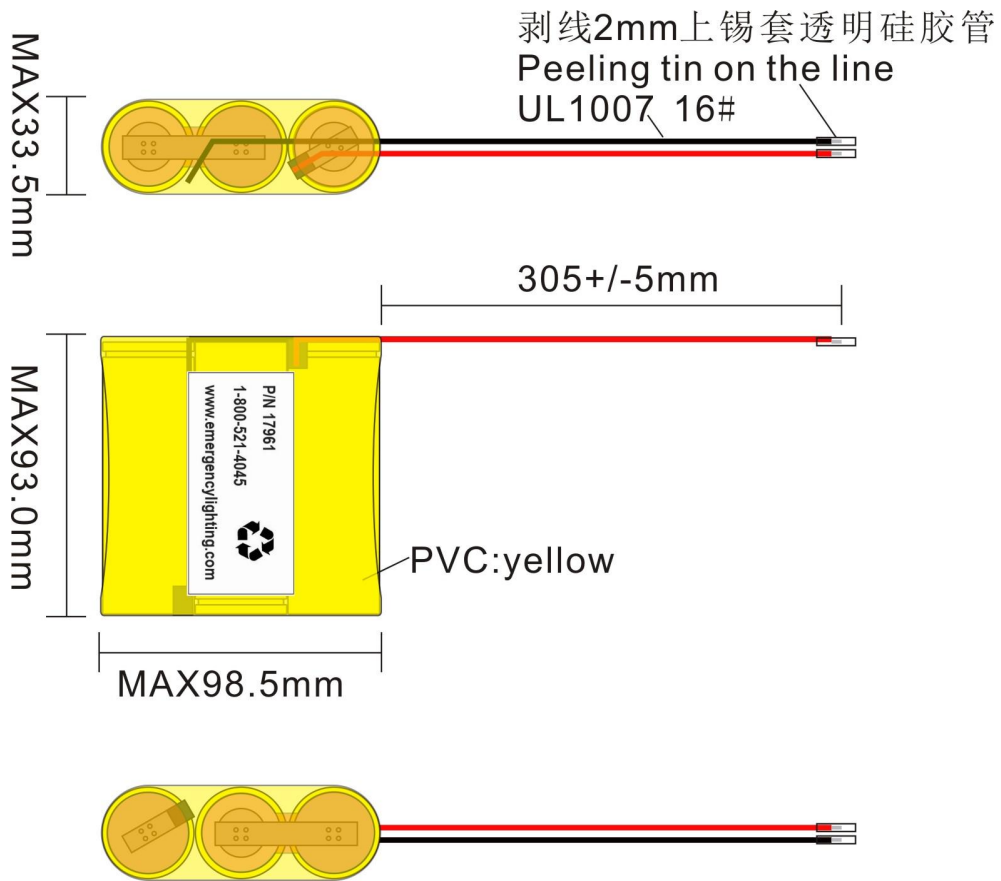
Remark:

IEC61951-1(2003) Cycle Life Test:

Cycle	Charge	Rest	Discharge
1	0.1C×16hrs	\	0.25C×2hrs20mins
2-48	0.25C×3hrs10mins	\	0.25C×2hrs20mins
49	0.25C×3hrs10mins	\	0.25Cto1.0/cell
50	0.1C×16hrs)	1-4hr(s)	0.2Cto1.0/cell

Cycle 1 to 50 shall be repeated until the discharge duration on any 50<sup>th</sup> cycle becomes less than 3hrs

## 7. Dimensions of the battery:



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